

INPUT DESCRIPTION

Data input to the SFWMM is accomplished via data files in regular text (ASCII) and binary formats (grid_io and HECDSS). The SFWMM uses the basic American Standard Code for Information Interchange (ASCII) 128-character set. Grid_io is a binary format consistent with a general software library for storing and retrieving two-dimensional data. This library was developed in-house by Perkins (1991) and subsequently modified by Van Zee (1993). It is a collection of C routines which read, write and search a binary data file containing a time series of information (typically stages or flow vectors) assigned to all grids in a two-dimensional convex grid network; while the cells are uniform rectangles, the grid boundary need not be rectangular. HECDSS or DSS, on the other hand, stands for Data Storage System developed by the Hydrologic Engineering Center of the U.S. Army Corps of Engineers (USACE, 1994). It was designed for storing and retrieving data most commonly used in water resources applications. By using a block of sequential data as a basic unit of storage, DSS results in a more efficient access of time series or other uniquely related data (USACE, 1991). In the SFWMM, it is primarily used to store discharge information for most of the structures simulated in the model. A brief description of all input files read by the model is given below.

ASCII Format

- ALTWMM = input data locator file; contains explicit location (full pathname) of input files required to run the SFWMM (~0.9 Kb)
- asrinput.dat = ASR input data set (~0.1 Kb)
 - brfrfm = WCA-3A rainfall and ET data to be used for optional computation of ENP rainfall formula water deliveries (~117 Kb)
 - canal22 = cell location of each canal (~8.7 Kb)
 - caoflpts = outflow structure properties for all water conservation areas (~96 Kb)
 - cndta22 = physical parameters for each canal (~49 Kb)
- eaa_canal_profiles = water surface elevation profile information for major EAA canals (~22 Kb)
- general_nodal_dep_struc.dat
 - = definition of discharge parameters used to calculate flows from structures discharging from areas outside the WCAs and are dependent on grid cell water depths or levels (~4.5 Kb)
- kflpts2 = flow point definition file (~5.2 Kb)
- lec_et.cf = control file for Lower East Coast unsaturated zone accounting (~0.6 Kb)
 - lecdef = primary model definition file: general parameters such as landuse types, ET, overland and seepage parameters, and other simulation options (~39 Kb)
- lecet_open_bin_files_def.dat
 - = general model definition file containing options necessary to open appropriate output files (~5.1 Kb)
- levee_spg_input.dat
 - = specification file for computation of localized seepage underneath levees (~9.2 Kb)

max_go_tbl = table of maximum allowable gate openings for S-354, S-351 and S-352 (~4.1 Kb)
 mlketrfr = total monthly historical LOK pan ET and rainfall data (~9.8 Kb)
 oper_sched_holy = time series of stages to be used as schedule for Holeyland (~15 Kb)
 pet6590 = daily reference ET for the ten weather stations used to assign reference ET for each grid cell in the model (~995 Kb)
 petweights = weights assigned to each grid cell corresponding to each weather station used in reference ET calculations (~113 Kb)
 reservoir_input.dat = description of inflow and outflow structures for STAs and proposed reservoirs (~16 Kb)
 stage_import_specs.dat = contains parameters related to areas affected by environmental triggers, trigger locations, threshold depths and other parameters related to the Everglades rain-driven operations (~7.3 Kb)
 statdta = model static data defined for each grid cell: land surface elevation, storage coefficient, land use, canal basin identifier, initial groundwater stage, aquifer depth, aquifer permeability, infiltration rate, acreage for six irrigation use types, effective root zone depth, max. soil moisture holding capacity, fraction of urban landscape irrigation receiving water from public water supply wells, fraction of golf course irrigation receiving water from treated wastewater (~219 Kb)
 trginput.dat = trigger module input file (~8.5 Kb)
 weir_specs.dat = specification of locations and properties of fixed-crest passive weirs where overland flow can be modified as used in the Restudy Alt.D13R (~0.6 Kb)
 well_ind_rss = pumpage for industrial and residential, self-supplied pumpage for each of the 12 months of a year (~83 Kb)
 import.nsm = time series of NSM-based target stages (~2.4 Mb)
 welprdt = simulation wellfield pumpage for public water supply; daily pumping rate for each of the 12 months of a year (~119 Kb)

Grid_io Format

daily_rainfall.bin = daily rainfall time series data (~78 Mb)
 daily_et_input.bin = daily crop PET, unsaturated zone ET for irrigated and non-irrigated cells east of the East Coast protective levee (~73 Mb)
 daily_nirrdmd.bin = daily net irrigation demands for six irrigation use types (~145 Mb)

HECDSS Format

flo.dss = known (historical) daily time series of structure discharges, cfs (~6.2 Mb)
 dmdro2x2.dss = daily demand and runoff time series, acre-ft/day (~30 Mb)

OUTPUT DESCRIPTION

Similar to model input, the South Florida Water Management Model generates several output files in three different formats: ASCII, grid_io and HECDSS. A short description of each output file follows.

ASCII Format

ann_canl_bud_summ (tape82)
= yearly canal flow summary (~445 Kb)
caloos_basin_budg.dat (tape73)
= daily Caloosahatchee basin/estuary flows (~2.0 Mb)
daily_canal_stg.dat (tape78)
= daily canal stages (~9.2 Mb)
daily_flw_to_res_gw.dat (tape131)
= daily summary of structure inflow into reservoir(s) recharging the aquifer (~387 Kb)
daily_minlvl_specs.dat (tape106)
= daily summary of indicators of occurrences of minimum flows and levels for the Water Conservation Areas (~896 Kb)
daily_stg_mon_pts.dat (tape76)
= daily stages at selected monitoring points (~2.5 Mb)
echo trig.out = echo file for trigger module input file (~6.4 Kb)
excess_ovlf_vol_lim.dat (tape69)
= monthly volumes of overland flow calculated using Manning's equation in excess of the volume limit (to prevent reversal of head gradient) imposed (~1.8 Mb)
lkrfetsto = end-of-month Lake Okeechobee rainfall, ET and storage data (~17 Kb)
losa_dmnd_runff_supply.dat (tape61)
= daily Lake Okeechobee Service Area (LOSA) Supply-Side Management summary output (~4.2 Mb)
mthly_canl_bud_summ (tape72)
= monthly canal flow summary (~6.1 Mb)
mthly_levee_spg.dat (tape32)
= monthly levee seepage flow summary (~191 Kb)
s4_s236_298d_dmdro.dat (tape68)
= daily demand/runoff summary for LOSAs (~597 Kb)
stluc_basin_budg.dat (tape74)
= daily St. Lucie basin/estuary flows (~2.4 Mb)
tape62 = daily water supply deliveries at major structures (~28 Mb)
trigoutp = primary output file for trigger module (~25 Kb)
trigwell = pumpage reduction file for trigger module (~4.8 Mb)

Grid_io Format

canal_evap.bin = total monthly evaporation from canals simulated in the model, 1000 ft³, (~2.6 Mb)

daily_stg_minus_lsel.bin = daily stage minus land surface elevation data, ft, (~86 Mb)

est_et.bin = total monthly unrestricted and restricted ET for the six irrigation use-types, in., (~7.8 Mb)

est_etiu_unrestr.bin = total monthly unsaturated zone ET assuming no water restrictions imposed on the Lower East Coast, in., (~15 Mb)

et_components.bin = ponding, unsaturated and saturated zone ET monthly totals, in., (~13 Mb)

et_total.bin = total monthly ET, in., (~2.6 Mb)

et_unsat_unacct.bin = total monthly amount of input unsaturated zone ET taken from the water table, in., (~2.6 Mb)

gw_flow.bin = end-of-month total x- and y-flow components for groundwater flow, 1000 ac-ft, (~5.1 Mb)

infiltr_perc.bin = total monthly infiltration and percolation, in., (~5.1 Mb)

ovflw_to_cnl = total monthly volume of overland flow captured by canals and vice versa, ac-ft, (~2.6 Mb)

ponding.bin = end-of-month ponding depth, ft, (~2.6 Mb)

pumpage.bin = total monthly well pumpage taking into consideration water restrictions, mgd, (~2.6 Mb)

rainfall.bin = total monthly rainfall, in., (~2.6 Mb)

seep_to_cnl.bin = total monthly seepage into/out of canals simulated in the model, ac-ft, (~2.6 Mb)

shortage.bin = total monthly public water supply, in mgd, and six irrigation use-type, in inches, cutback amounts for grid cells in the LECSAs (~4.5 Mb)

stage.bin = end-of-month stage, ft NGVD, (~2.6 Mb)

supply.bin = total monthly public water supply, in mgd, and six irrigation use-type, in inches, supplies for grid cells in the LECSAs (~18 Mb)

surface_flow.bin = end-of-month total x- and y- components of overland flow, 1000 ac-ft, (~5.1 Mb)

unsatdph.bin = end-of-month moisture content in the unsaturated zone for grid cells in the LECSAs, ft, (~2.6 Mb)

HECDSS Format

canal.dss = daily simulated water levels at downstream end of canals, ft NGVD (~7.4 Mb)

str2x2.dss = daily simulated structure discharges, cfs (~20 Mb)

note: All file sizes are approximate and refer to the Restudy 1995current base run (USACE and SFWMD, 1998).